Claims

1. Injection moulding device (1) comprising a mould body (2,5) having a cavity (4), an elongated nozzle (3) seated in the cavity, a valve pin (11) coaxially in the nozzle and actuating means (15) connected to the valve pin for axially displacing the valve pin in the nozzle, the actuating means comprising a cylinder housing (30) having a first and a second pressure medium inlet (38,39), and a piston (33) reciprocatable in the cylinder housing, the piston (33) being coupled to the valve pin (11), <u>characterised in that</u> the cylinder (15) is placed above the valve pin (11), coaxial therewith, the cylinder housing (30) being detachably coupled to a base member (14) on the mould body (2,5) and defining a chamber with an upper part (31) having a first diameter, the piston (33) having a piston head (34) which is in contacting relationship with the walls of the upper chamber part (31), the first and second pressure medium inlets (38,39) connecting to the upper chamber part (31) above and below the piston head, respectively, and a lower chamber part (32) comprising height adjustment means (40) that are axially displaceable in the cylinder housing (30), the height adjustment means (40) comprising a bore having a diameter, smaller than the diameter of the upper chamber part (31), the piston comprising a stem (35) being slidably seated in the bore of the height adjustment means (40), the valve pin (11) being guided through a bore (47) in the base member (14) and through the bore of the height adjustment means (40) and being with a valve pin head (37) releasably attached to the piston (33).

2. Injection moulding device (1) according to claim 1, wherein the piston stem (35) comprises an axial slot (36), extending to the perimeter of the stem, the slot (36) having a supporting shoulder engaging with a complementary shoulder on the valve pin head (37), the valve pin head being radially removable from the stem (35).

3. Injection moulding device (1) according to claim 3, wherein the slot (36) has a generally T-shaped cross-section.

4. Injection moulding device (1) according to claim 2,3 or 4, wherein the valve pin head (37) comprises a flat section which is received in the slot (36) in a fixed angular position.

5. Injection moulding device (1) according to any of the preceding claims, wherein the height adjustment means (40) comprises a number of engagement elements (44) around its perimeter, the cylinder housing (30) comprising an opening (43) connecting with the engagement elements (44).

6. Injection moulding device (1) according to any of the preceding claims, wherein the base member (14) comprises a cooling plate, having a cooling channel (18) located below the cylinder (15).

7. Injection moulding device (1) comprising a mould body (2,5) having a cavity, an elongated nozzle (3) seated in the cavity, a valve pin (11) extending coaxially in the nozzle and actuating means (15) connected to the valve pin for axially displacing the valve pin in the nozzle, the actuating means comprising a cylinder housing (30) having a first and a second pressure medium inlet (38,39) and a piston (33) reciprocatable in the cylinder housing (30), the piston (33) being coupled to the valve pin (11), characterised in that the cylinder (15) is placed above the valve pin (11), coaxial therewith, the cylinder housing (33) being detachably coupled to a base member (14) on the mould body (2,5), and defining a chamber with an upper part (31) having a first diameter, the piston having a piston head (34) which is in contacting relationship with the walls of the upper chamber part (31), the first and second pressure medium inlets (38,39) connecting to the upper chamber part (31) above and below the piston head (34), respectively, and a lower chamber part (32) comprising height adjustment means that are axially displaceable in the cylinder housing (30), the height adjustment means (40) comprising a bore having a diameter smaller than the diameter of the upper chamber part (31), the piston comprising a stem (35) slidably seated in the bore of the height adjustment means (40) along flexible seals (42) at the perimeter of the bore, the valve pin (11) being guided through a bore (17) in the

base member (14) and through the bore of the height adjustment means (40), the base member comprising a cooling channel (18) located below the cylinder (15).

8. Cylinder assembly (14,15) comprising a cylinder housing (30) having a first and second pressure medium inlet (38,39), and a piston (33) reciprocatable in the cylinder housing (30), the piston (33) being coupled to the valve pin (11), characterised in that the cylinder housing (30) is detachably coupled to a base member (14) and defining a chamber with an upper part (31) having a first diameter, the piston (33) having a piston head (34) which is in contacting relationship with the walls of the upper chamber part (31), the first and second pressure medium inlets (38,39) connecting to the upper chamber part above and below the piston head (34), respectively, and a lower chamber part (32) comprising height adjustment means (40) that are axially displaceable in the cylinder housing, the height adjustment means comprising a bore having a second diameter, smaller than the diameter of the upper chamber part (31), the piston comprising a stem (35) being slidably seated in the bore of the height adjustment means (40) along flexible seals (42) at the perimeter of the bore, the valve pin (11) being guided through a bore (17) in the base member and through the bore of the height adjustment means (40), the base member comprising a cooling channel (18) located below the cylinder (15).